CLAIMS:

1. A detector for the temporally resolved recording of detection events, comprising

- a converter device (34, 35, 36), which in the operating state supplies an electrical signal when a detection event occurs, and
- evaluation electronics (1) having
  - at least one trigger (3) that is coupled to the converter device (34, 35, 36) and is designed to supply a trigger signal (5) that is temporally assigned to the electrical signal,
  - at least one time signal source (10) that supplies a first analog time signal (Z1), and
  - at least a first sampler (6) that is coupled to the trigger (3) and is designed to provide a first momentary value (E1) of the first analog time signal (Z1), said first momentary value being temporally assigned to the trigger signal (5).

2. A detector as claimed in claim 1, characterized in that the first analog time signal (Z1) has a period.

3. A detector as claimed in claim 1 or 2, characterized in that the detector has at least one clock (C) which is provided to measure the time in units of a uniqueness interval ($P_{1/2}$, P_1) of the first analog time signal.

4. A detector as claimed in any of claims 1 to 3, characterized in that the detector is divided into at least two detector channels and each detector channel is assigned to in each case at least one of the triggers (3) and at least one of the samplers (6).

5. A detector as claimed in claim 1, characterized in that the evaluation electronics (1) have a second time signal source (11, 21) that supplies a second analog time signal (Z2) and there is a second sampler (7) which is designed to provide a second momentary value (E1') of the second analog time signal (Z2), said second momentary value being temporally assigned to the trigger signal (5).

6. A detector as claimed in claim 5, characterized in that the second analog signal source (Z2) is coupled to the first analog signal source (Z1).

7. A detector as claimed in any of claims 1 to 6, characterized in that the evaluation electronics (1) have a time calculation unit (23) which is coupled to the first sampler (6), the time calculation unit (23) being designed to calculate a time value which is assigned to the first momentary value (E1).

8. A detector as claimed in claim 7, characterized in that at least one multiplexer (12) is arranged between the sampler (6) and the time calculation unit (23).

9. An imaging device comprising a detector as claimed in any of claims 1 to 8.

10. A method for the temporally resolved recording of detection events, comprising the steps

- conversion of a detection event into an electrical signal,
- generation of a trigger signal (5) that is temporally assigned to the electrical signal,
- sampling of at least a first analog time signal (Z1) in temporal association with the trigger signal (5),
- provision of a first momentary value (E1) of the first analog time signal (Z1).